DIRECT TESTIMONY AND EXHIBITS OF

BRANDON S. BICKLEY

ON BEHALF OF

THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF

DOCKET NO. 2021-2-E

IN RE: ANNUAL REVIEW OF BASE RATES FOR FUEL COSTS FOR DOMINION ENERGY SOUTH CAROLINA, INC.

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Brandon S. Bickley. My business address is 1401 Main Street, Suite 900, Columbia, South Carolina 29201. I am employed by the South Carolina Office of Regulatory Staff ("ORS") in the Energy Operations Division as a Regulatory Analyst.

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I received my Bachelor of Science Degree with a major in Mechanical Engineering from the University of South Carolina in 2010. From 2010 to 2013, I was employed as a Nuclear Engineer, Reactor Fuel Safety Officer, and Shift Refueling Engineer at Norfolk Naval Shipyard. In that capacity, I performed engineering and operational duties in support of the United States Navy related to reactor servicing, reactor fuel, special nuclear material, special nuclear projects, security, and safety. From 2013 to 2017, I was employed as an Inspections, Tests, Analyses, and Acceptance Criteria ("ITAAC") Engineer with South Carolina Electric & Gas Company ("SCE&G"). In that capacity, I obtained the level of a Senior Engineer and performed ITAAC reviews and construction oversight for SCE&G. From 2017 to 2019, I was employed by Savannah River Remediation as a Senior Engineer. In that capacity, I performed systems engineering duties in support of the Defense Waste

Processing Facility for Savannah River Remediation. I began my employment with ORS as a Regulatory Analyst in July 2019.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA ("COMMISSION")?

A. Yes. I have previously testified before the Commission on several occasions including annual fuel proceedings, general rate cases, and the Utility Facility Siting and Environmental Protection Act.

Q. WHAT IS THE MISSION OF THE OFFICE OF REGULATORY STAFF?

A. ORS represents the public interest as defined by the South Carolina General Assembly as follows:

> [T]he concerns of the using and consuming public with respect to public utility services, regardless of the class of customer, and preservation of continued investment in and maintenance of utility facilities so as to provide reliable and high-quality utility services.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to set forth ORS's recommendations resulting from ORS's examination and review of Dominion Energy South Carolina, Inc.'s ("DESC" or "Company") power plant operations used in the generation of electricity to meet the Company's retail customer requirements during the review period. The review period includes the actual data for January 2020 through December 2020 ("Actual Period"), estimated data for January 2021 through April 2021 ("Estimated Period"), and forecasted data for May 2021 through April 2022 ("Forecasted Period").

Q. WAS THE REVIEW TO WHICH YOU TESTIFY PERFORMED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes, the review to which I testify was performed by me or under my supervision.

Q. WHAT DID ORS'S REVIEW OF THE COMPANY'S PLANT OPERATIONS INVOLVE?

A. ORS examined various fuel and performance related documents as part of our review. These documents addressed the Company's electric generation and power plant outage and maintenance activities. In preparation for this proceeding, ORS analyzed the Company's monthly fuel reports including power plant performance data, unit outages and generation statistics. ORS attended (via virtual participation) the April 2, 2020 Nuclear Regulatory Commission ("NRC") 2019 Annual Assessment Meeting for the V.C. Summer Nuclear Station ("V.C. Summer").

Q. WHAT ADDITIONAL STEPS WERE TAKEN IN ORS'S REVIEW OF THE COMPANY'S PROPOSAL IN THIS PROCEEDING?

A. ORS met virtually with Company personnel from various departments to discuss and review the Company's electric generation, power plant outages and maintenance activities. In addition, ORS monitors electric generation statistics through industry and governmental publications.

Q. DID ORS EXAMINE THE COMPANY'S PLANT OPERATIONS FOR THE ACTUAL PERIOD?

A. Yes. ORS reviewed the performance of the Company's generation units to determine if the Company made reasonable efforts to maximize unit availability and minimize fuel costs. ORS also reviewed the operating statistics of the Company's power plants by unit. Exhibit BSB-1 shows, in percentages, the average annual availability, net capacity, and forced outage factors of the Company's major generation units during the

Actual Period. This exhibit also includes the North American Electric Reliability Corporation ("NERC") national five-year (2015-2019) averages for availability, capacity, and forced outage factors for each type of generation plant.

Q. PLEASE EXPLAIN HOW THE OUTAGES ARE REPRESENTED ON EXHIBITS BSB-2 THROUGH BSB-4.

A. Exhibits BSB-2 and BSB-3 summarize outages lasting seven (7) or more days for major coal and natural gas units during the Actual Period, respectively. While not all plant outages were included in these exhibits, all outages were reviewed. ORS reviewed the outages, including information and data provided by the Company, and discussed the outages with Company management. ORS found the outages to be reasonable based on ORS's review of the outage data from the Actual Period, forecasted outage data from Docket No. 2020-2-E, historical outage data from previous annual fuel proceedings, and industry experience.

Exhibit BSB-4 shows the duration, type, and cause of each outage at V.C. Summer. During the Actual Period, there was one (1) scheduled refueling outage and one (1) forced outage. ORS reviewed the outages, including information and data provided by the Company as well as associated NRC documents, and discussed the outages with Company management. ORS found the outages to be reasonable based on ORS's review of the outage data from the Actual Period, forecasted outage data from Docket No. 2020-2-E, historical outage data from pervious annual fuel proceedings, and industry experience.

Q. WHAT WERE THE RESULTS OF ORS'S ANALYSIS OF THE COMPANY'S POWER PLANT OPERATIONS FOR THE ACTUAL PERIOD?

A. ORS's review of the Company's operation of its generation facilities during the Actual Period revealed that the Company made reasonable efforts to maximize unit availability and minimize fuel costs.

Q. DID ORS REVIEW THE COMPANY'S GENERATION MIX DURING THE ACTUAL PERIOD?

A. Yes. Exhibit BSB-5 shows the generation mix for the Actual Period by percentage and generation type. As shown in this exhibit, the nuclear, coal, and natural gas plants contributed an average of 21.73%, 16.16% and 49.58%, respectively, of the Company's generation throughout the Actual Period. This equates to approximately 87.47% of the Company's generation for the Actual Period. The remainder of the generation was met through a mix of renewables (hydroelectric and solar) and purchased power.

Q. DID ORS REVIEW THE COMPANY'S FUEL COSTS ON A PLANT-BY-PLANT BASIS FOR THE ACTUAL PERIOD?

A. Yes. Exhibit BSB-6 shows the average fuel costs for the major generation plants on the Company's system for the Actual Period and the megawatt-hours ("MWh") produced by those plants. V.C. Summer generation statistics reflect DESC's two-thirds ownership of the plant. The exhibit shows the lowest average fuel cost of 0.800 cents/kilowatt-hour ("kWh") at V.C. Summer and the highest average fuel cost of 3.876 cents/kWh at Williams Station. The Company utilizes economic dispatch which generally requires that the lower cost units be dispatched first.

Q. DID ORS REVIEW THE COMPANY'S FORECASTED POWER PLANT OPERATIONS FOR THE ESTIMATED AND FORECASTED PERIODS?

A. Yes. ORS reviewed the Company's maintenance schedules and projected performance data for its power plants for the Estimated and Forecasted Periods. ORS compared these schedules and performance data to previous maintenance schedules and performance data from Docket No. 2020-2-E, maintenance schedules and performance data from the Actual Period, and historical projections from previous annual fuel proceedings. Based on its review, ORS found the Company's maintenance schedules and projected data for its power plants for the Estimated and Forecasted Periods to be reasonable.

Q. DOES ORS RECOMMEND ANY ADJUSTMENTS TO THE FUEL FACTORS PROPOSED BY THE COMPANY?

A. No. ORS does not recommend any adjustments to the Fuel Factors based on the Company's power plant operations.

Q. WILL YOU UPDATE YOUR DIRECT TESTIMONY BASED ON INFORMATION THAT BECOMES AVAILABLE?

A. Yes. ORS fully reserves the right to revise its recommendations via supplemental testimony should new information not previously provided by the Company, or other sources, become available.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Office of Regulatory Staff

EXHIBIT BSB-1

Power Plant Performance Data

Dominion Energy South Carolina, Incorporated

Docket No. 2021-2-E

Plant	Unit	MW Rating	*Actual Period Data* Average Availability Factor (%)	Average Net Capacity Factor (%)	Average Forced Outage Factor (%)
Cope		415	47.65	26.48	1.81
Wateree	1	342	73.54	27.02	0.07
Wateree	2	342	10.79	0.84	88.06
Williams		605	84.57	50.28	0.11
Coal Totals		**1,704**	**54.14**	**29.92**	**22.51**
NERC 5-year average (All Coal Plants)			***82.44***	***51.99***	***5.11***
McMeekin	1	125	96.21	45.45	0.00
McMeekin	2	125	89.98	47.52	2.97
Urquhart	3	95	94.63	5.61	2.43
Natural Gas Totals		**345**	**93.61**	**35.19**	**1.80**
NERC 5-year average (Natural Gas Plants)			***80.87***	***12.27***	***5.24***
Columbia Energy Center	1	142	78.15	69.55	0.45
Columbia Energy Center	2	142	77.29	67.14	1.25
Columbia Energy Center	3	235	80.13	49.49	0.12
Jasper	1	156	92.17	74.66	0.00
Jasper	2	164	89.49	74.86	0.01
Jasper	3	147	89.38	75.26	0.02
Jasper	4	385	94.01	58.96	0.00
Urquhart	1	64	87.78	56.95	0.28
Urquhart	2	64	84.50	48.33	3.43
Urquhart	5	162	87.90	46.84	0.25
Urquhart	6	168	87.22	38.39	0.84
CC[1] Totals		**1,829**	**86.19**	**60.03**	**0.61**
NERC 5-year average (CC Plants)			***88.05***	***54.76***	***2.24***
V.C. Summer	1[2]	966	91.11	91.07	0.73
Nuclear Totals		**966**	**91.11**	**91.07**	**0.73**
NERC 5-year average (All Nuclear Plants)			***92.65***	***91.73***	***1.54***

[1] *CC designates Combined-Cycle units*

[2] *V.C. Summer Unit Ownership: DESC (66.7%, ≈644 MW) and South Carolina Public Service Authority (33.3%, ≈322 MW)*

EXHIBIT BSB-2

Office of Regulatory Staff

Coal Unit Outages - 7 Days or Greater Duration

Dominion Energy South Carolina, Incorporated

Docket No. 2021-2-E

Unit	Date Offline	Date Online	Hours	Outage Type	Explanation of Outage
Cope Unit 1	2/19/20	5/9/20	1,932.5	Planned	Unit take offline for planned Spring outage
Cope Unit 1	5/10/20	6/13/20	840.0	Maintenance	Unit taken offline for LP Turbine Rotor repair maintenance outage
Cope Unit 1	6/14/20	7/21/20	905.5	Extension	Extension of LP Turbine Rotor Repair maintenance outage
Cope Unit 1	10/1/20	10/30/20	697.6	Planned	Unit taken offline for planned Fall outage
Wateree Unit 1	1/14/20	1/23/20	222.0	Maintenance	Unit taken offline for Can Pump removal maintenance outage
Wateree Unit 1	9/12/20	11/20/20	1,671.2	Planned	Unit taken offline for planned Fall outage
Wateree Unit 2	2/19/20	12/31/20	7,588.7	Forced	Unit forced offline due to Generator out of service
Williams Unit 1	3/22/20	4/13/20	525.5	Planned	Unit taken offline for planned Spring outage
Williams Unit 1	11/28/20	12/24/20	636.4	Planned	Unit taken offline for planned Fall outage

Office of Regulatory Staff

Natural Gas Unit Outages - 7 Days or Greater Duration

Dominion Energy South Carolina, Incorporated

Docket No. 2021-2-E

Unit	Date Offline	Date Online	Hours	Outage Type	Explanation of Outage
Columbia Energy Unit 1	9/25/20	11/14/20	1,201.5	Planned	Unit taken offline for planned Fall outage
Columbia Energy Unit 1	11/15/20	12/2/20	426.5	Extension	Extension of planned Fall outage.
Columbia Energy Unit 2	3/29/20	4/6/20	186.8	Planned	Unit taken offline for planned Spring outage
Columbia Energy Unit 2	9/25/20	11/14/20	1,201.5	Planned	Unit taken offline for planned Fall outage
Columbia Energy Unit 2	11/15/20	12/4/20	475.5	Extension	Extension of planned Fall outage.
Columbia Energy Unit 3	9/25/20	11/14/20	1,201.5	Planned	Unit taken offline for planned Fall outage
Columbia Energy Unit 3	11/15/20	12/4/20	477.0	Extension	Extension of planned Fall outage.
Jasper Unit 1	3/8/20	3/22/20	352.9	Planned	Unit taken offline for planned Spring outage
Jasper Unit 1	11/13/20	11/23/20	227.8	Planned	Unit taken offline for planned Fall outage
Jasper Unit 2	3/8/20	3/22/20	357.5	Planned	Unit taken offline for planned Spring outage
Jasper Unit 2	11/5/20	11/21/20	384.0	Planned	Unit taken offline for planned Fall outage
Jasper Unit 3	3/8/20	3/22/20	345.8	Planned	Unit taken offline for planned Spring outage
Jasper Unit 3	10/23/20	10/31/20	192.3	Planned	Unit taken offline for planned Fall outage
Jasper Unit 3	11/13/20	11/21/20	176.5	Planned	Unit taken offline for planned Fall outage

Office of Regulatory Staff
Natural Gas Unit Outages - 7 Days or Greater Duration
Dominion Energy South Carolina, Incorporated
Docket No. 2021-2-E

Unit	Date Offline	Date Online	Hours	Outage Type	Explanation of Outage
Jasper Unit 4	3/8/20	3/22/20	347.4	Planned	Unit taken offline for planned Spring outage
Jasper Unit 4	11/13/20	11/21/20	178.4	Planned	Unit taken offline for planned Fall outage
McMeekin Unit 1	10/29/20	11/12/20	332.6	Planned	Unit taken offline for planned Fall outage
McMeekin Unit 2	4/22/20	5/5/20	320.0	Maintenance	Unit taken offline for repair of Reheat and Intercept Valves maintenance outage
McMeekin Unit 2	5/17/20	5/28/20	261.0	Forced	Unit forced offline for Vacuum Pump issue
McMeekin Unit 2	11/4/20	11/16/20	289.7	Planned	Unit taken offline for planned Fall outage
Urquhart Unit 1	9/6/20	10/14/20	919.9	Planned	Unit taken offline for planned Fall outage
Urquhart Unit 2	4/11/20	4/19/20	201.6	Planned	Unit taken offline for planned Spring outage
Urquhart Unit 2	9/6/20	10/10/20	828.0	Planned	Unit taken offline for planned Fall outage
Urquhart Unit 2	10/10/20	10/22/20	284.5	Forced	Unit forced offline due to Generator Breaker failure
Urquhart Unit 5	9/6/20	10/14/20	919.3	Planned	Unit taken offline for planned Fall outage
Urquhart Unit 6	4/11/20	4/19/20	195.2	Planned	Unit taken offline for planned Spring outage
Urquhart Unit 6	9/6/20	10/10/20	822.4	Planned	Unit taken offline for planned Fall outage

EXHIBIT BSB-4

Office of Regulatory Staff
Nuclear Unit Outages
Dominion Energy South Carolina, Incorporated
Docket No. 2021-2-E

V.C. Summer Nuclear Station				
Date Offline	**Date Online**	**Hours**	**Outage Type**	**Explanation of Outage**
4/10/20	5/10/20	721.7	Planned	Unit was taken offline for planned refueling outage
9/7/20	9/10/20	59.0	Forced	Unit was forced offline due to Accumulator air leak on Fedwater Isolation Valve.

Office of Regulatory Staff
Generation Mix (Percentage)
Dominion Energy South Carolina, Incorporated
Docket No. 2021-2-E

	2020												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
Nuclear	25.56	25.59	28.13	9.48	15.69	22.27	18.60	19.02	18.67	26.72	28.27	23.96	**21.73**
Coal	22.45	17.41	10.83	3.80	16.01	16.25	16.68	16.88	17.08	18.16	18.43	17.13	**16.16**
Natural Gas	43.73	45.43	46.28	71.53	52.41	50.55	53.01	55.06	51.91	38.87	39.59	45.91	**49.58**
Hydroelectric	3.78	6.02	5.72	3.61	4.98	2.88	3.20	2.09	2.76	2.45	3.79	3.76	**3.67**
Solar	3.83	4.69	6.25	9.34	10.13	7.85	7.56	6.88	7.16	7.96	6.89	5.22	**6.97**
Wind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Biomass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Purchased Power	0.65	0.86	2.79	2.24	0.78	0.20	0.95	0.07	2.42	5.84	3.03	4.02	**1.89**

Numbers may not equal 100% due to rounding.

EXHIBIT BSB-6

Office of Regulatory Staff
Generation Statistics for Major Plants
Dominion Energy South Carolina, Incorporated
Docket No. 2021-2-E

Plant	Fuel Type	Average Fuel Cost (¢/kWh) [1]	Generation (MWh)
V.C. Summer [2]	Nuclear	0.800	5,155,263
Columbia Energy Center	Natural Gas	1.596	2,881,265
Jasper CC	Natural Gas	1.890	5,248,214
Urquhart CC	Natural Gas	2.303	1,867,412
Cope	Coal/Natural Gas	2.606	965,410
Urquhart #3	Natural Gas	3.112	47,021
McMeekin	Natural Gas	3.612	1,020,803
Wateree	Coal	3.630	836,926
Williams	Coal	3.876	2,681,400

[1] ***Includes Base Fuel and Environmental Costs.***

[2] ***Generation Statistics for V.C. Summer represent DESC's 66.7% ownership.***